

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/JP2005/012270

International filing date (day/month/year)  
27.06.2005

Priority date (day/month/year)  
28.06.2004

International Patent Classification (IPC) or both national classification and IPC  
G03F7/095, B41J2/16

Applicant  
CANON KABUSHIKI KAISHA

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

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**WRITTEN OPINION OF THE  
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**Box No. I Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or  
Industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	6,7
	No: Claims	1-5,8-11
Inventive step (IS)	Yes: Claims	
	No: Claims	1-11
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

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**Box No. VIII Certain observations on the International application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V.**

**1 Reference is made to the following documents:**

**D1 : EP 1 380 422 A (CANON KABUSHIKI KAISHA) 14  
January 2004 (2004-01-14)**

**D2 : EP 1 380 425 A (CANON KABUSHIKI KAISHA) 14  
January 2004 (2004-01-14)**

**2 INDEPENDENT CLAIMS 1 AND 2**

**2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 and 2 is not new in the sense of Article 33(2) PCT.**

**D1 and D2 (see particularly the passages cited in the International Search Report) disclose a method for manufacturing a minute structure such as a liquid discharge head by providing two layers of two different positive-working photoresist compositions sensitive to an ionizing radiation of different wavelengths, patterning these layers one after the other by irradiating then via a mask and developing them. D1 and D2 also specify methyl isopropenyl ketone as a material for the first photoresist and a copolymer of methacrylate and up to 30% methacrylic acid with a molecular weight of e. g. 50000 (see D1) as a material for the second photoresist or copolymer comprising methacrylate and methacrylic anhydride (see D2) for the second photoresist.**

**The characterizing portion only contains a result to be achieved without indication of any technical features how this desired result (convex shape) can be achieved (see in this context also item VIII below); the characterizing portion therefore could not be considered to contain a technical feature which could be suitable (if it was new)**

as a distinguishing feature with regard to the prior art. Nevertheless a convex shape also could be derived from D1 and D2.

Thus, claims 1 and 2 must be considered to be anticipated by the prior art documents cited above.

## **2.2 DEPENDENT CLAIM 3**

The subject-matter of claim 3 is also known from D1 and D2.

## **3 INDEPENDENT CLAIMS 4 AND 5**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 4 and 5 is not new in the sense of Article 33(2) PCT.

D1 and D2 (see particularly the passages cited in the International Search Report) disclose a method for manufacturing a minute structure such as a liquid discharge head by providing two layers of two different positive-working photoresist compositions sensitive to an ionizing radiation of different wavelengths, patterning these layers one after the other by irradiating then via a mask and developing them. D1 and D2 also specify methyl isopropenyl ketone as a material for the first photoresist and a copolymer of methacrylate and up to 30% methacrylic acid with a molecular weight of e. g. 50000 (see D1) as a material for the second photoresist or copolymer comprising methacrylate and methacrylic anhydride (see D2) for the second photoresist.

Thus, claims 4 and 5 must be considered to be anticipated by the prior art documents cited above.

**4 INDEPENDENT CLAIMS 6 AND 7**

D1 and D2 cited above do not disclose the application of a third resist layer on the top of the first two resist layer. Such measure is generally known in the photoresist technology, but if the Applicant could show that such measure leads to particular improvements when applying photoresist technology for manufacturing liquid discharge heads, it would not seem excluded that claims 6 and 7 not only had to be accepted as novel, but also the presence of an inventive step had to be acknowledged (see also item VIII, point 2 below).

**5 DEPENDENT CLAIMS 8-11**

Claims do not add novel subject-matter to claims 4-7.

6 The industrial applicability cannot be called into question.

**Re Item VIII.**

1. Claim 1 and 2 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter in terms of the result to be achieved (convex shape), which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

2. The present set of claims as a whole does not meet the requirements of Article 6 PCT, since claims 2, 4, 5, 6 and 7 are not clearly referred back to preceding claims in order to avoid unnecessary repetitions of features already comprised in preceding claims, and to show that this application relates to one single general inventive concept. If claims 2, 4, 5, 6 and 7 are clearly referred back to the preceding claims, the whole set of claims could be

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drafted much more concise.